Complete Summary

TITLE

Chronic kidney disease (CKD): the percentage of patients on the CKD register with hypertension and proteinuria who are treated with an angiotensin-converting enzyme inhibitor (ACE-I) or angiotensin receptor blocker (ARB) (unless a contraindication or side effects are recorded).

SOURCE(S)

British Medical Association (BMA) and NHS Employers. Quality and outcomes framework guidance for GMS contract 2009/10. London (UK): British Medical Association, National Health Service Confederation; 2009 Mar. 162 p.

Measure Domain

PRIMARY MEASURE DOMAIN

Process

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the Measure Validity page.

SECONDARY MEASURE DOMAIN

Does not apply to this measure

Brief Abstract

DESCRIPTION

This measure is used to assess the percentage of patients on the chronic kidney disease (CKD) register with hypertension and proteinuria who are treated with an angiotensin-converting enzyme inhibitor (ACE-I) or angiotensin receptor blocker (ARB) (unless a contraindication or side effects are recorded).

RATIONALE

The international classification developed by the US National Kidney Foundation describes five stages of chronic kidney disease (CKD) using an estimated glomerular filtration rate (eGFR) to measure kidney function. People with CKD stages three to five have, by definition, less than 60 percent of their kidney function. Stage three is a moderate decrease in GFR with or without other

evidence of kidney damage. Several groups (National Institute for Health and Clinical Excellence [NICE], Scottish Intercollegiate Guidelines Network [SIGN], United Kingdom Consensus) have recommended splitting stage 3 into 3A and 3B (see Table 1 in the original measure documentation). Stage four is a severe decrease in GFR with or without other evidence of kidney damage and stage five is established renal failure. The Quality of Outcomes Framework (QOF) indicator set refers to people with stage 3 to 5 CKD.

CKD is a long-term condition; the most recent population data from the National Health and Nutrition Examination Survey (NHANES 1999-2004) suggests that the age standardised prevalence of stage 3 to 5 CKD in the non-institutionalised American population is approximately 6% (Coresh et al., JAMA 2007). The prevalence in females was higher than in males (6.9 versus 4.9%). In the fully adjusted model, the prevalence of low GFR was strongly associated with diagnosed diabetes (OR, 1.54; 95% CI, 1.28-1.80) and hypertension (OR, 1.98; 95%CI, 1.73-2.67) as well as higher body mass index (BMI) (OR, 1.08; 95% CI, 1.02-1.15 per 5-unit increment of BMI).

In the UK the prevalence of CKD stage 3–5 was 8.5% and was higher in females, 10.6% in females versus 5.8% in males (Stevens et al., Kidney International 2007). The Association of Public Health Observatories has modelled the prevalence of CKD for England and Wales based on the results of the study by Stevens et al. and report a population prevalence of 8.9%.

The NHS Information Centre reports a prevalence of CKD for 2006/7 of 2.4% using QMAS returns suggesting that, to date, CKD is under-reported in English general practitioner (GP) practices.

This measure is one of five Chronic Kidney Disease measures. The CKD indicator set applies to people with stage three, four and five CKD (eGFR less than 60 mL/min/1.73m^2 confirmed with at least two separate readings over a 3 month period).

CKD may be progressive; prevalence increase with age and female sex but progression increases with male sex, and South Asian and African Caribbean ethnicity. People of South Asian origin are particularly at risk of having both diabetes and CKD. Diabetes is more common in this community than in the population overall. People of African and African Caribbean origin have an increased risk of CKD linked to hypertension.

Only a minority of people with stage one or two CKD go on to develop more advanced disease and symptoms do not usually appear until stage four. Where eGFR has persistently been recorded below 60 (less than 60) the CKD (stage 3) label should continue to apply, even if future management may lead to an improvement in eGFR.

Early identification of CKD is important as it allows appropriate measures to be taken not only to slow or prevent the progression to more serious CKD but also to combat the major risk of illness or death due to cardiovascular disease. The presence of proteinuria is a key risk multiplier at all stages of CKD and CKD is an independent risk factor for cardiovascular disease and a multiplier of other risk factors (Wali and Henrich, Cardiol Clin 2005).

NICE guidance, early identification and management of Chronic Kidney Disease in adults in primary and secondary care was published in September 2008. See also the SIGN Guideline 103, Diagnosis and management of CKD in adults, June 2008.

These indicators reflect both of the guidance documents:

- Albumin-creatinine ratio (ACR) is the preferred measure of proteinuria
- NICE suggests blood pressure (BP) should be kept below 140 (systolic) and 90 (diastolic) with a target for systolic of between 120 and 139 mm Hg. There is a tougher standard for diabetes. This compares with a BP audit standard of 145/85 in this guidance for 40 to 70% of the CKD population
- NICE recommends that the use of ACE inhibitors when there is hypertension and an ACR of greater than or equal to 30mg/mmol. However, when ACR greater than or equal to 70mg/mmol NICE recommends ACE inhibitors even in the absence of hypertension. As with BP there are stricter standards in diabetes
- NICE divides stage 3 into Stage 3a and 3b. They recommend testing for bone disease and anaemia in Stage 3b (eGFR 30 to 44), as well as stages 4 and 5
- NICE also recommends addition of the suffix (p) to denote significant proteinuria, defined as an ACR greater than or equal to 30 mg/mmol (protein-creatinine ratio [PCR] greater than or equal to 50 mg/mmol).

The QOF indicators are likely to converge with NICE guidance over coming years.

Angiotensin-converting enzyme inhibitors (ACE-Is) and angiotensin receptor blockers (ARBs) are generally more effective than other anti-hypertensives in minimising deterioration in kidney function, and this effect is most marked where there is significant proteinuria. Such treatment is both clinically and cost effective (Kent et al., JASN 2007. See also: Lewis et al., NEJM 1993; Brenner et al., NEJM 2001; Ruggenenti et al., Lancet 1999).

The gold standard test for measuring proteinuria is a 24-hour urine collection, though problems with timing and completeness make this an impractical test to use in general practice. The alternatives are to test the ACR or PCR in the urine or to use a stick test.

SIGN Guidance also recommends measuring proteinuria with ACR in patients with diabetes and TPCR in non-diabetic patients, reflecting the differing evidence base for theses two patient populations whereas recent NICE guidance has suggested that the ACR should be used in all patients.

Thus, patients with non-diabetic stage 3 to 5 CKD should have an annual test of proteinuria ideally using ACR, or PCR according to local guidance. People with diabetes already have an annual micro-albuminuria test.

A systematic review has shown that investigation for infection of asymptomatic people with one "+" or more of proteinuria is not indicated (Carter JL et al., Nephrol Dial Transplant 2006). Practitioners should only go on to send off a mid-stream urine or perform another test to look for infection if there are symptoms.

It is not possible to derive a simple correction factor that allows the conversion of ACR values to PCR or 24 hour urinary protein excretion rates because the relative amounts of albumin and other proteins will vary depending on the clinical circumstances; however, the following table of approximate equivalents will allow clinicians unfamiliar with ACR values to see the approximate equivalent PCR and 24 hour urinary protein excretion rates.

Albumin: creatinine ratio (mg/mmol)	Protein: creatinine ratio (mg/mmol)	24 hour urinary protein excretion (g/day)
30	50	0.5
70	100	1

PRIMARY CLINICAL COMPONENT

Chronic kidney disease (CKD); hypertension; proteinuria; angiotensin-converting enzyme inhibitor (ACE-I); angiotensin receptor blocker (ARB)

DENOMINATOR DESCRIPTION

Patients who are on the chronic kidney disease (CKD) register* with hypertension and proteinuria

*__Note__: The register includes patients aged 18 years and over with CKD (US National Kidney Foundation: Stage 3 to 5 CKD).

NUMERATOR DESCRIPTION

Number of patients from the denominator who are treated* with an angiotensin-converting enzyme inhibitor (ACE-I) or angiotensin receptor blocker (ARB) (unless a contraindication or side effects are recorded) (see the related "Numerator Inclusions/Exclusions" field in the Complete Summary)

*__Note__: Prescribed an ACE-I or ARB in the previous six months

Evidence Supporting the Measure

EVIDENCE SUPPORTING THE CRITERION OF QUALITY

- A clinical practice guideline or other peer-reviewed synthesis of the clinical evidence
- A formal consensus procedure involving experts in relevant clinical, methodological, and organizational sciences
- One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

NATIONAL GUIDELINE CLEARINGHOUSE LINK

- Diagnosis and management of chronic kidney disease.

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Unspecified

State of Use of the Measure

STATE OF USE

Current routine use

CURRENT USE

Internal quality improvement
National reporting
Pay-for-performance

Application of Measure in its Current Use

CARE SETTING

Physician Group Practices/Clinics

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Physicians

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Group Clinical Practices

TARGET POPULATION AGE

Age greater than or equal to 18 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

See the "Rationale" field.

ASSOCIATION WITH VULNERABLE POPULATIONS

Unspecified

BURDEN OF ILLNESS

Unspecified

UTILIZATION

Unspecified

COSTS

Unspecified

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

Data Collection for the Measure

CASE FINDING

Users of care only

DESCRIPTION OF CASE FINDING

Patients who are on the chronic kidney disease (CKD) register of a practice with hypertension and proteinuria*

*__Note__: The Quality and Outcomes Framework (QOF) includes the concept of exception reporting. This has been introduced to allow practices to pursue the quality improvement agenda and not be penalised, where, for example, patients do not attend for review, or where a medication cannot be prescribed due to a contraindication or side-effect.

The following criteria have been agreed for exception reporting:

A. patients who have been recorded as refusing to attend review who have been invited on at least three occasions during the preceding twelve months
B. patients for whom it is not appropriate to review the chronic disease parameters due to particular circumstances, e.g., terminal illness, extreme frailty

C. patients newly diagnosed within the practice or who have recently registered with the practice, who should have measurements made within three months and delivery of clinical standards within nine months, e.g., blood pressure or cholesterol measurements within target levels
D. patients who are on maximum tolerated doses of medication whose levels remain suboptimal
E. patients for whom prescribing a medication is not clinically appropriate, e.g., those who have an allergy, another contraindication or have experienced an adverse reaction
F. where a patient has not tolerated medication
G. where a patient does not agree to investigation or treatment (informed dissent), and this has been recorded in their medical records
H. where the patient has a supervening condition which makes treatment of their condition inappropriate, e.g., cholesterol reduction where the patient has liver disease
I. where an investigative service or secondary care service is unavailable

Refer to the original measure documentation for further details.

DENOMINATOR SAMPLING FRAME

Patients associated with provider

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions

Patients who are on the chronic kidney disease (CKD) register* of a practice with hypertension and proteinuria

*__Note__: The register includes patients aged 18 years and over with CKD (US National Kidney Foundation: Stage 3 to 5 CKD).

Exclusions

See "Description of Case Finding" field for exception reporting.

RELATIONSHIP OF DENOMINATOR TO NUMERATOR

All cases in the denominator are equally eligible to appear in the numerator

DENOMINATOR (INDEX) EVENT

Clinical Condition

DENOMINATOR TIME WINDOW

Time window is a single point in time

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions

Number of patients from the denominator who are treated* with an angiotensin-converting enzyme inhibitor (ACE-I) or angiotensin receptor blocker (ARB)

*__Note__: Prescribed an ACE-I or ARB in the previous six months

Exclusions

Exclude patients with a contraindication or side effect to ACE-I or ARB recorded.

MEASURE RESULTS UNDER CONTROL OF HEALTH CARE PROFESSIONALS, ORGANIZATIONS AND/OR POLICYMAKERS

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

NUMERATOR TIME WINDOW

Fixed time period

DATA SOURCE

Medical record
Pharmacy data
Registry data

LEVEL OF DETERMINATION OF QUALITY

Individual Case

PRE-EXISTING INSTRUMENT USED

Unspecified

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

Better quality is associated with a higher score

ALLOWANCE FOR PATIENT FACTORS

Unspecified

STANDARD OF COMPARISON

External comparison at a point in time
Internal time comparison
Prescriptive standard

PRESCRIPTIVE STANDARD

Payment stages: 40-80%

EVIDENCE FOR PRESCRIPTIVE STANDARD

British Medical Association (BMA) and NHS Employers. Quality and outcomes framework guidance for GMS contract 2009/10. London (UK): British Medical Association, National Health Service Confederation; 2009 Mar. 162 p.

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

Unspecified

Identifying Information

ORIGINAL TITLE

CKD 5. The percentage of patients on the CKD register with hypertension and proteinuria who are treated with an angiotensin converting enzyme inhibitor (ACE-I) or angiotensin receptor blocker (ARB) (unless a contraindication or side effects are recorded).

MEASURE COLLECTION

Quality and Outcomes Framework Indicators

MEASURE SET NAME

Chronic Kidney Disease

DEVELOPER

British Medical Association
National Health Service (NHS) Confederation

FUNDING SOURCE(S)

The expert panel who developed the indicators were funded by the English Department of Health.

COMPOSITION OF THE GROUP THAT DEVELOPED THE MEASURE

The main indicator development group is based in the National Primary Care Research and Development Centre in the University of Manchester. They are: Professor Helen Lester, NPCRDC, MB, BCH, MD; Dr. Stephen Campbell, NPCRDC, PhD; Dr. Umesh Chauhan, NPCRDC, MB, BS, PhD.

Others involved in the development of individual indicators are: Professor Richard Hobbs, Dr. Richard McManus, Professor Jonathan Mant, Dr. Graham Martin, Professor Richard Baker, Dr. Keri Thomas, Professor Tony Kendrick, Professor

Brendan Delaney, Professor Simon De Lusignan, Dr. Jonathan Graffy, Dr. Henry Smithson, Professor Sue Wilson, Professor Claire Goodman, Dr. Terry O'Neill, Dr. Philippa Matthews, Dr. Simon Griffin, Professor Eileen Kaner.

FINANCIAL DISCLOSURES/OTHER POTENTIAL CONFLICTS OF INTEREST

None for the main indicator development group.

ENDORSER

National Health Service (NHS)

ADAPTATION

Measure was not adapted from another source.

RELEASE DATE

2006 Feb

REVISION DATE

2009 Mar

MEASURE STATUS

This is the current release of the measure.

This measure updates a previous version: British Medical Association (BMA), and NHS Employers. Quality and outcomes framework guidance for GMS contract 2008/09. London (UK): British Medical Association, National Health Service Confederation; 2008 Apr. 148 p.

SOURCE(S)

British Medical Association (BMA) and NHS Employers. Quality and outcomes framework guidance for GMS contract 2009/10. London (UK): British Medical Association, National Health Service Confederation; 2009 Mar. 162 p.

MEASURE AVAILABILITY

The individual measure, "CKD 5. The Percentage of Patients on the CKD Register with Hypertension and Proteinuria Who Are Treated with an Angiotensin Converting Enzyme Inhibitor (ACE-I) or Angiotensin Receptor Blocker (ARB) (Unless a Contraindication or Side Effects Are Recorded)," is published in the "Quality and Outcomes Framework Guidance." This document is available from the British Medical Association Web site.

NQMC STATUS

This NQMC summary was completed by ECRI on November 14, 2006. The information was verified by the measure developer on November 29, 2006. This NQMC summary was updated by ECRI Institute on January 28, 2009. This NQMC summary was updated again by ECRI Institute on October 1, 2009. The information was verified by the measure developer on March 4, 2010.

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Date Modified: 5/3/2010